SCOPE OF WORK – Rev 1 11-6-15

CONSTRUCTION OBSERVATION AND TECHNICAL SUPPORT FOR SUBSURFACE ISOLATION BARRIER DESIGN AND INSTALLATION

SITE NAME: West Lake Landfill Superfund Site, St. Louis County, Bridgeton, Missouri

SITE ID: EPA ID# MOD079900932

1. BACKGROUND INFORMATION

The West Lake Landfill Site is on a parcel of approximately 200 acres located in the northwestern portion of the St. Louis metropolitan area. It is situated approximately one mile north of the intersection of Interstate 70 and Interstate 270 within the limits of the city of Bridgeton in northwestern St. Louis County. The Missouri River lies approximately 1.5 miles to the north and west of the Site.

The Site consists of the Bridgeton Sanitary Landfill (Former Active Sanitary Landfill) and several inactive areas with sanitary and demolition fill that have been closed. Land use at the site and the surrounding areas in Earth City is industrial.

Other facilities which are not subject to this response action are located on the 200-acre parcel including concrete and asphalt batch plants, a solid waste transfer station, and an automobile repair shop.

The Site was used agriculturally until a limestone quarrying and crushing operation began in 1939. The quarrying operation continued until 1988 and resulted in two quarry pits. Beginning in the early 1950s, portions of the quarried areas and adjacent areas were used for landfilling municipal solid waste (MSW), industrial solid wastes, and construction/demolition debris. These operations were not subject to state permitting because they occurred prior to the formation of the Missouri Department of Natural Resources (MDNR) in 1974. Two landfill areas were radiologically contaminated in 1973 when they received soil mixed with leached barium sulfate residues.

The barium sulfate residues, containing traces of uranium, thorium, and their long-lived daughter products, were some of the uranium ore processing residues initially stored by the Atomic Energy Commission (AEC) on a 21.7-acre tract of land in a then undeveloped area of north St. Louis County, now known as the St. Louis Airport Site (SLAPS), which is part of the St. Louis Formerly Utilized Sites Remedial Action Program managed by the U.S. Army Corps of Engineers (USACE).

Reportedly, 8,700 tons of leached barium sulfate residues were mixed with approximately 39,000 tons of soil and then transported to the Site. According to the

landfill operator, the soil was used as cover for municipal refuse in routine landfill operations.

The geology of the landfill area consists of Paleozoic-age sedimentary rocks overlying Pre-Cambrian-age igneous and metamorphic rocks. The Paleozoic bedrock is overlain by unconsolidated alluvial and loess deposits of recent (Holocene) age. Alluvial deposits of varying thickness are present beneath Areas 1 and 2. The landfill debris varies in thickness from 5 to 56 feet in Areas 1 and 2, with an average thickness of approximately 30 feet in Area 2. The underlying alluvium increases in thickness from east to west beneath Area 1. The alluvial thickness beneath the southeastern portion of Area 1 is less than 5 feet (bottom elevation of 420 ft/amsl) while the thickness along the northwestern edge of Area 1 is approximately 80 feet (bottom elevation of 370 ft/amsl). The thickness of the alluvial deposits beneath Area 2 is fairly uniform at approximately 100 feet (bottom elevations of 335 ft/amsl).

A subsurface oxidation event (SSE) is ongoing in the South Quarry Landfill portion of the Bridgeton Sanitary Landfill. The South Quarry cell is connected to the North Quarry cell which is adjacent to Operable Unit 1 (OU-1), Area 1, one of the locations on site that received the radiologically contaminated soils in 1973. Pursuant to an order from the Missouri Attorney General, the Responsible Party (RP) is required to install a subsurface barrier between the North Quarry cell and OU-1 Area 1 to prevent the SSE from migrating into the radiologically impacted materials (RIM). Since the isolation barrier will be placed on the Westlake Landfill portion of the site, EPA will be the lead Agency. The work will be completed under an EPA-issued Administrative Order on Consent under EPA's CERCLA removal authorities.

2. OBJECTIVE

The objective of this request is for EPA Region 7 to obtain assistance from USACE for technical assistance, pre-construction/construction observation support, and community relations support associated with the RP's design and construction of an isolation barrier at OU-1 in the West Lake Landfill Superfund site.

3. SCOPE OF WORK

The USACE shall furnish personnel and services for the following tasks:

1. Technical Assistance
2. Design Review
3. Pre-Construction and Construction Observation
4. Community Relations Support

Specific activities for each task are detailed below.

Task 1. Technical Assistance

This task includes work efforts related to technical assistance as well as project initiation, management, and support. Activities required under this task include the following:

1.1 USACE shall perform the following project initiation activities:

- participate in a scoping meeting with EPA to discuss the work assignment
- provide proposed level of effort and cost for the support activities to be performed
- Based on EPA's review of the proposed level of effort and cost estimate, USACE may be called upon to participate in negotiations with EPA on the proposed level of effort and to revise the level of effort as a result of these negotiations

1.2 USACE shall perform site-specific project management including:

- Establish and maintain necessary work assignment files
- Provide ~~quarterly~~ monthly reporting and invoices
- Monitor costs and performance
- Coordinate staffing and other support activities to perform the work assignment tasks in accordance with the Statement of Work (SOW). Attend necessary work assignment meetings.

1.3 USACE shall accommodate any external audit or review mechanism that EPA may require.

1.4 USACE shall perform the following Technical Assistance activities:

- Review relevant background documents to achieve a familiarity with the site with respect to the design and construction of the isolation barrier.
- Provide input to EPA regarding potentially applicable technologies for constructing the barrier.
- Review field work documents including, but may not be limited to, Gamma Core Penetration Tests, field data summary reports (draft and final), and Bird Mitigation Plan (draft and final). Provide comments to the EPA Remedial Project Manager (RPM), provide clarifications and participate in comment resolution meetings, as required, and back-check final reports to ensure comments have been resolved.

Task 2. Design Review

This task includes work related to design and work plan reviews for the isolation barrier. Activities required under this task include the following:

2.1 USACE shall review RP-prepared plans and specifications for the isolation barrier. Design reviews shall be conducted at 30% design stage, 60% design stage, 90% design stage, and 100% design stage. Review will include providing comments to the EPA RPM focusing on the completeness, correctness, feasibility, effectiveness, and robustness of the RP-prepared design. Other areas of review focus may be included, as requested by EPA. USACE reviewers shall document comments, provide clarification if required, and participate in design comment resolution discussions and/or design review meetings, as requested.

2.2 USACE shall review RP-prepared work plans associated with construction of the isolation barrier. Work plans to be reviewed include, but may not be limited to, waste handling and disposal plan, water management plan, and health and safety plan. Work plan reviews shall be conducted on draft and final submittals. Review will include providing comments to the EPA RPM focusing on the completeness, correctness, safety, feasibility, and robustness of the RP-prepared work plans. Other areas of review focus may be included, as requested by EPA. USACE reviewers shall document comments, provide clarification of comments if required, and participate in comment resolution discussions, if requested.

Task 3. Pre-Construction & Construction Observation

This task includes work related to activities associated with pre-construction site preparation and construction of the isolation barrier. Activities required under this task include the following:

3.1 USACE shall observe pre-construction activities required for installation of the isolation barrier, as requested. These activities may include, but not be limited to: preparation of waste staging, screening, and segregation areas, water control/dewatering measures, decontamination areas, and air monitoring areas. Observations shall be documented and provided to the EPA RPM on a daily basis. Observation documentation shall include, but may not be limited to adequacy of preparations, compliance with applicable plans, and sequence of operations.

3.2 USACE shall observe construction activities for the isolation barrier. Observations shall be documented and provided to the EPA RPM on a daily basis. Observation documentation shall include, but may not be limited to compliance with the approved design and work plans, sequence of operations, and any activities that may impact the effectiveness of the isolation barrier.

3.3 If requested, USACE shall observe pre-design GCPT coring. USACE shall document observations with respect to compliance with an approved sampling plan.

Task 3. Community Relations

This task includes work related to activities associated with community relations. Activities required under this task include the following:

4.1 USACE staff will attend and participate in Community Advisory Group Meetings as requested by the EPA. USACE will assist EPA in explaining USACE tasks performed and USACE's evaluation of the isolation barrier design.

4.2 USACE staff will attend and participate in public meetings and public availability sessions, as requested by the EPA. USACE will assist EPA in explaining USACE tasks performed and USACE's evaluations of the isolation barrier design and construction effort.

4. WORK ASSIGNMENT PERIOD OF PERFORMANCE

April 15, 2014 to December 30, ~~2015~~2016

5. SCHEDULE OF DELIVERABLES/MILESTONES

Task #	Deliverable	Schedule for Completion
1.2	Quarterly Reports/Invoices	Throughout period of performance
2.1	Design Reviews, 30%, 60%, 90%, 100%	As specified by EPA
2.2	Work Plan Reviews	As specified by EPA
3.1	Ground Preparation Activities Observation Documentation	Daily throughout the ground preparation period
3.2	Construction Activity Observation Documentation	Daily throughout the isolation barrier construction period
3.3	GCPT Coring Observation Documentation	As specified by EPA

6. PEFORMANCE CRITERIA

USACE's deliverables will be inspected by the government for acceptability. Unacceptable deliverables will be returned to the USACE with comments and directions for necessary corrections or rework which may be applicable.

7. ACCEPTANCE CRITERIA

The following are the acceptance criteria for the deliverables under this work assignment.

TASK	DELIVERABLE/ SERVICE	CRITERIA
1.2	~~Quarterly~~ Monthly Reports/Invoices	Narrative of specific task and subtask activities sufficient enough for work assignment manager to evaluate the work assignment progress.
2.1	Design Reviews	Timely, complete, and accurate review and evaluation of engineering issues, along with specific recommendations for changes as necessary.
2.2	Work Plan Reviews	Timely, complete, and accurate review and evaluation of engineering issues, along with specific recommendations for changes as necessary.
3.1, 3.2	Pre-construction site preparation and construction observation	Documentation of observations that are accurate and complete such that the EPA OSC confirm compliance with approved design and work plans. If concerns are noted that they are brought to the EPA OSC's attention in a timely manner.
3.3	Pre-construction GCPT coring observations	Documentation of observations that are accurate and complete such that the EPA technical team can assure coring and sampling activities were conducted in accordance with approved work plans. If concerns are noted that they are brought to the EPA RPM's attention in a timely manner.

8. EPA CONTACTS

Project Manager ~~Dan Gravatt~~Brad Vann 913-551-~~7324~~7611

Project Officer Ina Square 913-551-7357

PROJECT PERIOD

The project period for this IA action (duration of IA work activity) is April 15, 2014 to September 30 ~~2015~~2016. The total IA project period is expected to be April 15, 2014 to December 30, ~~2015~~2016.

PRE-AWARD COSTS

N/A

BUDGET-TRAVEL

I have verified with Robyn Kiefer from the Kansas City District of the USACE that the proposed travel is necessary for the project and the IA is not for the purpose of augmenting USACE travel funds.

BUDGET – INDIRECT COSTS

Indirect costs totaled ~~$xxx,xxx.xx~~See Attached

BUDGET

~~Xxxx insert table xxxx~~ See Attached